TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2019-04-02-01** **Date: 13-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-12-18
Type of Mix	:	WMM (Wet Mix Macadam)
Date of test	:	11-12-18
Oven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	315	315	2.9	97.1	95-100
22.4	2259	2574	23.4	76.6	60-80
11.2	2179	4753	43.2	56.8	40-60
4.75	2251	7004	63.7	36.3	25-40
2.36	1621	8625	78.4	21.6	15-30
0.6	623	9248	84.1	15.9	8-22
0.075	1338	10586	96.2	3.8	0-5

Note:-

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Technical Manager

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TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2019-04-02-01** **Date: 13-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-12-18
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of test	:	11-12-18

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	73.9	74.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	225.9	225.8
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.4	0.4
5	Aggregate impact value	(B/A)*100	24.6	24.7
6	Aggregate impact value (Mean of two tests)	Pecentage	24.6	

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Page 1/1
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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-04-02-01**	**Date: 13-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.	
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.	
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.	
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	11-12-18	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of test	:	11-12-18	

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	12.8%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	12.5%	
Combined Flakiness and Elongation Index for WMM	25.3%	

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TEST RESULTS OF GRADATION FOR SDBC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2019-04-02-01**	**Date: 26-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.	
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.	
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.	
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	24-12-18	
Type of Mix	:	SDBC-Plant (Semi Dense Bituminous Concrete)	
Date of test	:	24-12-18	
Weight of Sample	:	5000	Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0.0	100.0	100
9.5	410	410	8.2	91.8	90-100
4.75	2187	2597	51.9	48.1	35-51
2.36	1038	3635	72.7	27.3	24-39
1.18	525	4160	83.2	16.8	15-30
0.3	503	4663	93.3	6.7	9-19
0.075	169	4832	96.6	3.4	3-8
PAN	168	5000	100.0	0.0	0

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR SEMI DENSE BITUMINOUS CONCRETE

Lab ID : **CP-RW-2019-04-02-01** **Date: 27-12-18**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.

Customer Reference : BBMP/EE/BTP/WO/178/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 24-12-18

Type of Mix : SDBC (Semi Dense Bituminous Concrete)

Date of test : 24-12-18

Physical Requirements fo Coarse Aggregate for Semi Dense Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	11.1	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	9.5		
Strength	Aggregate Impact Value	21.8	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.58	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.31	Maximum 2%	IS:2386 Part III

Note:-

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HIGHWAY & BUILDING MATERIALS TESTING LABORATORY | STRUCTURAL | GEO TECHNICAL | PROJECT MANAGEMENT | SURVEYING SERVICES |

TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2019-04-02-01** **Date: 27-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	24-12-18
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	24-12-18

Type of Binder	:	60/70
% of Binder Used	:	5.0%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	99.0	1.0	98.8	Minimum Retained Coating 95%
2	98.5	1.5		
3	99.0	1.0		

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2019-04-02-01** **Date: 27-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.
Customer Reference	:	BBMP/EE/BTP/WO/178/2018-19
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	24-12-18
Sample ID No	:	2018-03-01-01/01
Type of Mix	:	SDBC (Semi Dense Bituminous Concrete)
Date of test	:	24-12-18

The results of the tests conducted on the Semi Dense Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-16
1	Marshal Stability at 60°C, KN	10.54	10.11	8.2KN(min)
2	Marshal flow at 60°C, mm	3.22	3.29	2-4
3	Percent air Voids	4.59	4.25	3-5
4	Percent Voids in mineral Aggregate(VMA %)	13.88	13.94	13-15
5	Percent Voids filled with Bitumen(VFB %)	70.32	70.0	65-75
6	Density, g/cc	2.26	2.24	–

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR SDBC
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID : **CP-RW-2019-04-02-01** **Date: 31-12-18**

Customer : Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.

Address : Byatarayanapura Sub Division, BBMP, Bangalore.

Project Name : Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.

Agency : Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.

Customer Reference : BBMP/EE/BTP/WO/178/2018-19

Source of Sample : Sample supplied by Agency

Sample Condition : Satisfactory

Date of Receipt : 29-12-18

Type of Mix : SDBC (Semi Dense Bituminous Concrete)

Date of test : 29-12-18

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	A	500	500
2	Weight of the sample After extraction	B	476	477
3	Bitumen percentage	$\frac{A-B}{A} \times 100$	4.8	4.6
4	Average percentage	%	4.7	

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Lab ID : **CP-RW-2019-04-02-01** **Date: 31-12-18**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 476

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	31	31	6.51	93.5	90-100
4.75	213	244	51.26	48.7	35-51
2.36	63	307	64.50	35.5	24-39
1.18	39	346	72.69	27.3	15-30
0.3	71	417	87.61	12.4	9-19
0.075	34	451	94.75	5.3	3-8
PAN	25	476	100.00	0.0	0

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 477

IS Sieve Size(mm)	Weight Retained(gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-15(grading-2)
13.2	0	0	0	100.0	100
9.5	29	29	6.08	93.9	90-100
4.75	215	244	51.15	48.8	35-51
2.36	62	306	64.15	35.8	24-39
1.18	41	347	72.75	27.3	15-30
0.3	66	413	86.58	13.4	9-19
0.075	32	445	93.29	6.7	3-8
PAN	32	477	100.00	0.0	0

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Format No: CP/TF/01

TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2019-04-02-01** **Date: 20-12-18**
Customer	:	Assistant Executive Engineer, Byatarayanapura Sub Division, BBMP, Bangalore.
Address	:	Byatarayanapura Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to Road and Drains at Royal Enclave Cross Roads in Ward No.05 Byatarayanapura Sub Division.
Agency	:	Sri. S.K. Keshavamurthy #104, Sampigehalli, Jakkur Post, Bangalore-560064.
Customer's Reference	:	BBMP/EE/BTP/WO/178/2018-19
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	19-12-18
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-1220(1978) (Reaffirmed-2004)
Date of test	:	19-12-18

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**64**	60 to 70
2	Softening Point, °C	**51.2**	Min. 40°C
3	Ductility, cm	**98**	Min. 75cm
4	Flash point, °C	**245**	Min. 220°C
	Fire point, °C	**272**	

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